

5

- b. removing portions of said material structure from regions not covered by said emitter contact to expose portions of said base layer;
 - c. doping said exposed portions of said base layer and portions of said collector layer; and
 - d. removing at least a partial thickness of said collector layer from beneath portions of said base layer such that said base layer overhangs said removed thickness.
2. The method of claim 1, wherein said step of doping said exposed portions of said base layer and portions of said collector layer comprises implanting dopant through said base layer into an upper portion of said collector layer.
3. The method of claim 1, wherein said step of doping said exposed portions of said base layer and portions of said collector layer comprises diffusing dopants through said base layer into an upper portion of said collector layer.
4. The method of claim 1, wherein said collector layer comprises a first sublayer of a first semiconductor material over said subcollector layer and a second sublayer of a second semiconductor material over said first sublayer.
5. The method of claim 4, wherein said first semiconductor material is AlGaAs and said second semiconductor material is GaAs.
6. A method for fabricating a bipolar transistor, comprising the steps of:
- a. forming an emitter contact on a material structure including:
 - i. a first collector layer of a first conductivity type and of a first semiconductor material over a subcollector layer;
 - ii. a second collector layer of a second semiconductor material over said first collector layer;
 - iii. a base layer of a second conductivity type formed over said second collector layer;
 - iv. an emitter layer formed over said base layer;
 - b. removing portions of said material structure from regions not covered by said emitter contact to expose said base layer; and
 - c. removing a part of said first collector layer from beneath portions of said base layer without removing substantial portions of said second collector layer.
7. The method of claim 6, further comprising the step of doping portions of said base layer and portions of said collector layer.

6

8. The method of claim 6, wherein said first semiconductor material is AlGaAs and said second semiconductor material is GaAs.

9. The method of claim 7, wherein said step of doping said portions of said base layer and portions of said collector layer comprises implanting dopant through said base layer into an upper portion of said collector layer.

10. The method of claim 7, wherein said step of doping portions of said base layer and portions of said collector layer comprises diffusing dopants through said base layer into an upper portion of said collector layer.

11. The method of claim 1, wherein said collector layer comprises a first sublayer over said subcollector layer and a second sublayer over said first sublayer; and removing at least a partial thickness comprises removing portions of said first sublayer without substantially removing said second sublayer.

12. The method of claim 11, wherein said first sublayer is formed from and of a first semiconductor material and said second sublayer is formed from a second semiconductor material.

13. The method of claim 1, wherein said base layer substantially overhangs said removed thickness.

14. A method of fabricating a bipolar transistor, comprising:

- forming a first collector sublayer over a substrate;
- forming a second collector sublayer on said first collector sublayer;
- forming a base layer on said second collector sublayer;
- forming an emitter layer on said base layer;
- etching away portions of said first collector sublayer without substantially etching said substrate or said second collector sublayer, such that said second collector sublayer and said base layer are undercut, whereby the junction capacitance is decreased.

15. The method of claim 14, wherein said first sublayer is formed from a first semiconductor material and said second sublayer is formed from a second semiconductor material.

16. The method of claim 14, further comprising doping portions of said base layer and portions of said second collector sublayer.

* * * * *